

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YOSHIO KUROKAWA, HARUOMI SUGITA,
MASAHIKO SEKITA, YASUAKI MUKAI,
HIDEAKI SEGAMI and HIROFUMI NORO

Appeal No. 2004-2071
Application No. 09/893,109

ON BRIEF

MAILED

SEP 30 2004

U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Before COHEN, FRANKFORT, and MCQUADE, Administrative Patent Judges.

MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Yoshio Kurokawa et al. originally took this appeal from the final rejection of claims 1 through 3, all of the claims pending in the application. As the examiner has since withdrawn the rejection of claim 3, the appeal as to this claim is hereby dismissed, leaving for review the standing rejection of claims 1 and 2.

THE INVENTION

The invention relates to "roller chains for use in motorcycles as a power transmission drive, and more particularly to such a low noise roller chain, which is cable of reducing noises, generated when the chain engages a sprocket" (specification, page 1). Representative claim 1 reads as follows:

1. A low noise roller chain comprising:
inner and outer links alternately arranged and articulately connected together in a longitudinal direction of the roller chain,
the inner links each having a bushing and a pair of inner plates connected to opposite ends of the bushing, respectively,
the outer links each having a pin and a pair of outer plates connected to opposite ends of the pin, respectively, the pin extending through the bushing; and
a rigid roller made of metal and an elastic roller made of elastic material that are arranged end to end and fitted on the bushing so as to jointly form a roller assembly,
the elastic roller having a width along an axis of the roller assembly, which is 13 to 45% of an overall width of the roller assembly along the axis thereof, and
the elastic roller having a uniform thickness throughout the width thereof, the thickness of the elastic roller being larger than a thickness of the rigid by 5 to 25% of the thickness of the elastic roller.

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THE PRIOR ART

The reference relied on by the examiner as evidence of obviousness is:

Japanese Patent Document¹ 7-83290 Mar. 28, 1995

THE REJECTION

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Japanese reference.

Attention is directed to the main and reply briefs (Paper Nos. 14 and 16) and to the final rejection and answer (Paper Nos. 9 and 15) for the respective positions of the appellants and the examiner regarding the merits of this rejection.²

DISCUSSION

The Japanese reference discloses a roller chain designed to operate in high speed, large load environments in a noise suppressing and durable manner. Using the terminology employed in appealed claim 1, the prior art chain comprises inner and

¹ The record contains a "machine-assisted" English language translation of this reference prepared on behalf of the USPTO and presumably provided to the appellants. Although this "machine-assisted" translation is sufficient in this case to convey the fair teachings of the reference, such purpose would be better served with a translation produced by a qualified human translator.

² In the final rejection, claim 3 stood rejected under 35 U.S.C. § 112, first paragraph, as being based on a non-enabling specification. Upon consideration of the appellants' main brief, the examiner withdrew this rejection (see page 3 in the answer).

outer links alternatively arranged and articulately connected together (see Figures 1 and 5). Each inner link includes a bushing 12 and a pair of inner plates 13 connected to opposite ends of the bushing, and each outer link includes a pin 11 and a pair of outer plates 14 connected to opposite ends of the pin with the pin extending through the bushing. The chain also comprises a rigid roller 15 made of metal and an elastic roller 16 made of elastic material arranged end to end and fitted on the bushing so as to jointly form a roller assembly which moves into and out of contact with the teeth of an associated sprocket.

Of particular relevance to the obviousness issues raised in this appeal is the disclosure in the Japanese reference that the desirable noise suppression and durability characteristics of the subject chain stem from the axial width and radial thickness parameters of the elastic roller. The reference teaches that the elastic roller has a uniform thickness which is greater than that of the rigid roller. This allows the elastic roller to suppress run noise by (1) engaging the sprocket before the rigid roller does and (2) elastically deforming so as to absorb the shock of the initial contact and prevent the rigid roller from crashing into the sprocket at high speed. The reference also teaches that there is a direct correlation between the durability of the rigid

roller and its axial width, and that durability can be enhanced by minimizing the axial width of the elastic roller to allow the axial width of the rigid roller to be maximized.

As indicated above, claim 1 requires the elastic roller to have a width which is 13 to 45% of the overall width of the roller assembly and to have a thickness larger than the thickness of the rigid roller by 5 to 25% of the thickness of the elastic roller. The appellants submit that the rejection of claim 1 is unsound because the Japanese reference does not teach, and would not have suggested, a roller chain meeting these limitations. The examiner, on the other hand, contends that the reference's drawings show elastic roller 16 as having a width and thickness which fall within the specified ratio ranges (see page 3 in the final rejection), and that

[w]hile the Japanese document does not show precise ranges of width [and thickness] ratios in the drawings, the present disclosure does not show any unexpected results. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the claimed ratios of width and thickness, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, [220 F.2d 454,] 105 USPQ 233 [(CCPA 1955)] [final rejection, page 3].

The examiner's reliance on the drawings of the Japanese reference to support a finding that elastic roller 16 has a width and thickness which fall within the ratio ranges specified in claim 1 is not well taken. In this regard, the Japanese reference does not describe any quantitative values for these parameters or indicate that the drawings are to scale. It is well established that patent drawings do not define the precise proportions of elements depicted therein and may not be relied on to show particular sizes if the underlying specification does not describe quantitative values or indicate that the drawings are to scale. Hockerson-Halberstadt Inc. v. Avia Group International Inc., 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000).

Nonetheless, the fair teachings of the Japanese reference do support the examiner's conclusion that a roller chain meeting the elastic roller width and thickness parameters set forth in claim 1 would have been obvious within the meaning of § 103(a).

More particularly, the Japanese reference teaches that the axial width of the rigid roller, and hence the complementary axial width of the elastic roller, are result effective variables with respect to durability. Although the reference does not expressly teach that the thickness of the elastic roller is a result effective variable with respect to noise suppression, a

person of ordinary skill in the art would have readily appreciated such to be the case from the description in the reference of the manner in which the elastic roller elastically deforms on contact with the sprocket to cushion the engagement of the rigid roller and the sprocket. The discovery of an optimum value of a variable in a known process is normally obvious, with exceptions to this general rule lying in cases where the parameter optimized was not recognized to be result effective or where the results of optimizing a variable which was known to be result effective are unexpectedly good. In re Antonie, 559 F.2d 618, 620, 195 USPQ 6, 8-9 (CCPA 1977). Id. In the present case, the fair teachings and suggestions of the Japanese reference establish that the axial width and radial thickness of the elastic roller disclosed therein are art-recognized result effective variables with respect to durability and noise suppression, respectively. Moreover, the record does not contain any evidence that the particular elastic roller width and thickness ratios set forth in claim 1 afford unexpectedly good results. To the contrary, the appellants' specification (see the paragraph bridging pages 11 and 12) discusses the noise suppression and durability test results shown in Figures 3 through 6 of the application in terms of achieving a sufficient

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noise suppressing effect without causing an objectionable reduction of durability. Given the fair teachings of the Japanese reference with respect to the twin objectives of noise suppression and durability and the relationship between these objectives and the axial width and radial thickness of the elastic roller, a person of ordinary skill in the art would have found obvious the kind of experimentation necessary to arrive at a roller chain having an elastic roller meeting the ratio ranges recited in claim 1 in order to achieve a desired balance between noise suppression and durability (see In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980)).

In light of the foregoing, the examiner's determination that the differences between the subject matter recited in claim 1 and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art is well founded.


Accordingly, we shall sustain the standing 35 U.S.C. § 103(a) rejection of claim 1, and of dependent claim 2 which stands or falls therewith (see page 4 in the main brief), as being unpatentable over the Japanese reference.

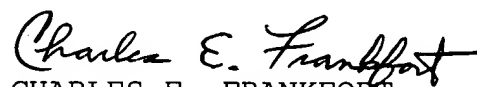
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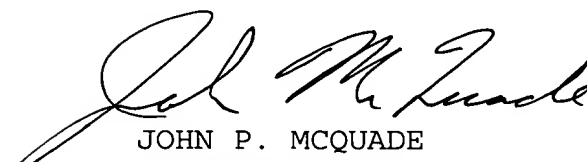
SUMMARY

The decision of the examiner to reject claims 1 and 2 is affirmed.

AFFIRMED


IRWIN CHARLES COHEN
Administrative Patent Judge


CHARLES E. FRANKFORT
Administrative Patent Judge


JOHN P. MCQUADE
Administrative Patent Judge

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